REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested.

In this Amendment and Response, applicants have amended Claims 1, 29 and 30 to further define the saturation magnetization as 2.3 Tesla or greater and have added new Claim 31. New Claim 31 is supported by page 3, lines 14-16; page 10, lines 27-31; and page 12, lines 27-29 of the instant application. Since new Claim 31 does not introduce new matter into the application, entry thereof is respectfully requested.

In the Final Office Action dated September 3, 2004, Claims 1-10 and 28-30 are rejected under 35 U.S.C. § 103 as allegedly obvious over the combination of the article to E.M. Kakuno, et al. entitled "Structure, Composition, and Morphology of Electrodeposited Co_xFe_{1-x} Alloys", J. Electrochemical Soc., Vol. 144, No. 9, September 9, 1997, pp. 3222-3226 ("Kakumo") and U.S. Patent No. 4,695,351 to Mallary ("Mallary").

Further, the Examiner alleges that the § 132 Declaration of Hong Xu filed September 3, 2004 ("Declaration") is defective because:

1. The Examiner asserts that the alloy containing 76% Fe (page 8 of the Declaration, the last line) cannot be used as a basis for comparison between Kakuno's alloy and the inventive alloy;
2. The Examiner questions "the inventive CoFe film comprising 64% Fe" on page 9 of the Declaration as to the preparation thereof;

3. The Examiner alleges that the level of purity of the inventive alloy does not distinguish over Kakuno's alloy in view of the use of the term "substantially". The Examiner also questions the labeling of Exhibit 2 and Exhibit 3;
4. The Examiner argues that the claims do not distinguish over alloys having a saturation magnetization of 2.2 Tesla in view of the use of the term "about" in the claims.
5. The Examiner questions the labeling of Exhibit 4;
6. The Examiner alleges that the Declaration is not commensurate in scope to the claims in view of the use of the alloy containing 76% Fe; and
7. The Examiner questions the multiple curves in the ESCA profile on page 13 of the Declaration as to whether those curves can support the applicants' discussion of the results.

The above-alleged defects in the § 1.132 Declaration are herewith addressed as follows.

First, applicants respectfully submit that the alloy containing 76% Fe (page 8 of the Declaration, the last line) can be used to represent the claimed invention because the claims recite a maximum Fe content of about 75% (Claim 1, the last line). Applicants claim in the present application a cobalt-iron alloy electroplated film, and the claimed Fe content ranges from about 55% to about 75% by weight. The term "about 75%" does not preclude the percentage that is considered in the art as reasonably close to 75%. In regard to the claimed subject matter, i.e., the weight percentage of Fe in the alloy, and the claimed range, one skilled in the art would consider the difference between about 75% Fe

and 76% Fe negligible. Further, the scope and spirit of the present invention are illustrated by the embodiments and examples in the instant application (the Table on page 26 and the Examples on pages 20-25 of the application). In view of the above, one skilled in the art would conclude that the alloy containing 76% Fe (page 8 of the Declaration, the last line) can represent the claimed invention.

Second, applicants respectfully point out that paragraph (6) of the Declaration (page 3 to page 4) describes in detail how the electroplated CoFe alloy films containing 64 % Fe and 76% Fe were prepared.

Third, applicants submit that the impurity level in Kakuno's alloy is significantly higher than that in the claimed alloy. As indicated by paragraph (11) of the Declaration (page 11), the oxygen and nitrogen content in Kakuno's alloy are 5.7 atomic% and 0.19 atomic% respectively, while the inventive alloy has well below 1 atom% of oxygen content and is free of the nitrogen content. Since the oxygen and nitrogen content is impurity, i.e., unwanted material that deteriorates the desired product, one skilled in the art would consider the combined 5.89% in Kakuno's alloy as significant. Further, the impurity level in the Kakuno's alloy is near or more than six-fold as that in the inventive alloy. In light of the intended use of the inventive alloy films, i.e., use for magnetic recording devices as magnetic films, one skilled in the art would consider a near six-fold or more difference in impurity levels as significant because impurities such as oxygen or nitrogen can substantially reduce the magnetic moment of the alloy (the last paragraph on page 12 of the Declaration). In addition, as a material to be used in magnetic recording head, the inventive alloy is considerably different from Kakuno's alloy because the alloy film prepared according to Kakuno's process is not suitable for the above-mentioned use.

It is common knowledge in the art that annealing is a necessary step in the process of fabricating thin film magnetic recording heads. However, Kakuno's film broke completely into small pieces after low temperature annealing (the last paragraph on page 9 of the Declaration). In contrast, the inventive film containing equal amount of Fe are still intact after the same annealing treatment (the last paragraph on page 9 of the Declaration). In regard to the labeling of Exhibit 2 and Exhibit 3, applicants respectfully assert that as the Declaration was filed, both a marked tab and a marked separating page are placed before each of the Exhibits as labeling and separating marks.

Fourth, applicants submit that the inventive alloy film is distinct from the Kakuno's alloy film because a magnetic moment of 2.3 Tesla is substantially different from a magnetic moment of 2.2 Tesla in the context of high-density magnetic recording. CoFe alloys have a wide application in magnetic recording industry, where every improvement in saturation magnetization is considered important. More magnetization can greatly improve the performance of magnetic recording devices because even a moderate magnetization improvement allows a higher field in the write pole of the recording head to be generated and therefore a higher coercivity recording media to be used. Consequently this media allows a higher density of bits to be recorded. It is well-recognized in the field that materials with a moderate difference in magnetic moment, such as 0.1 Tesla, can result in substantial differences in performance in high-density magnetic recording devices. Therefore, the present invention is distinctive and superior over Kakuno's alloy film. Further, as mentioned above, applicants have amended Claims 1, 29 and 30 to define the saturation magnetization as 2.3 Tesla or greater.

Fifth, applicants respectfully point out that the text immediately above the top figure in Exhibit 4 reads as "X-ray diffraction data for plated Kakuno film at Fe 43, 64 and 76 wt% and inventive film at Fe 76 wt%:" and the text immediately above the bottom figure in Exhibit 4 reads as "Figure 4 from Kakuno's paper". Applicants respectfully submit that those texts are sufficiently clear, especially in light of the further elaboration in paragraph (10) of the Declaration.

Sixth, as discussed above, two embodiments of the present invention, i.e., CoFe alloy films containing 64% Fe and 76% Fe, are presented in the Declaration, and the comparative data sufficiently show the superiority of the claimed alloy film over Kakuno's alloy film. Therefore, applicants submit that the Declaration is commensurate in scope to the claims.

Seventh, applicants respectfully assert that the curves on the graphs on page 13 of the Declaration (ESCA profiles) are multi-colored in the original document and clearly support the applicants' discussion of the results. The curves may have been reduced into gray lines with corresponding grading scales upon photocopying.

In view of the above, applicants respectfully submit that the Declaration under 37 CFR § 1.132 filed June 14, 2004 is sufficient to overcome the rejection of Claims 1-10 and 28-30 as set forth in the Office Action dated September 3, 2004.

Turning to the rejection of Claims 1-10 and 28-30 under § 103, applicants respectfully submit that the present invention is not obvious over the combination of Kakuno and Mallary, especially in view of the amendments herewith.

The Examiner argues that Kakuno's alloy would be expected to posses all the same properties as recited in the instant claims because Kakuno's alloys allegedly have

compositions that are encompassed by the claims and allegedly are produced by substantially identical processes.

"Ascertain the differences between the prior art and the claims at issue requires interpreting the claim language, and considering both the invention and the prior art references as a whole." (emphasis added by applicants) See MPEP 2141.02. "In determining whether the invention as a whole would have been obvious under 35 U.S.C. § 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question... but also to those properties of the subject matter which are inherent in the subject matter and are disclosed in the specification... Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention as a whole, and not some part of it, which must be obvious under 35 U.S.C. § 103." In re Antonie, 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1977) (emphasis added by applicants) (citations omitted).

Applicants respectfully submit that Kakuno's alloys are produced by a substantially different process, and consequently Kakuno's alloy films do not possess the inherent characteristics of the claimed alloy films. Hence, the claimed alloy films are different from Kakuno's alloy films as a whole.

Since electroplating is such a widely-used plating method and encompasses a broad range of techniques, one skilled in the art would not readily consider two plating processes as substantially identical just because they are both electroplating processes. Contrarily, it is well-known in the field that different electroplating conditions cause different morphology and crystallinity of the resulting films and therefore even the

properties of electroplated films with the same composition can vary significantly depending on the electroplating conditions, such as bath chemistry, mixing method, current density, pH and temperature. The present application and Kakuno use different plating processes. Specifically, the difference are: (1) the present process uses a paddle cell with continuous filtration, while Kakuno uses a stationary system; (2) the plating bath of the present process uses specific additives, such as mono or polycarboxylic acid(s), boric acid, aromatic sulfinic acid or a salt therof, optionally a halide salt, and optionally a surfactant, while the plating bath of Kakuno does not use any additives; and (3) the plating bath of the present process uses buffer and has a pH of about 2.5 to about 3.5, while the plating bath of Kakuno does not adjust pH.

Consequently, the properties of the inventive alloy films are markedly different from that of Kakuno's alloy films. As shown by the data in the Declaration, the inventive alloy films distinguish over Kakuno's alloy films in magnetic moment, resistivity, B-H loops, crystallinity and impurity concentration. As discussed above, the inventive alloy film is distinct from the Kakuno's alloy film because a magnetic moment of 2.3 Tesla is substantially different from a magnetic moment of 2.2 Tesla in the context of high-density magnetic recording. CoFe alloys have a wide application in magnetic recording industry, where every improvement in saturation magnetization is considered important. More magnetization can greatly improve the performance of magnetic recording devices because even a moderate magnetization improvement allows a higher field in the write pole of the recording head to be generated and therefore a higher coercivity recording media to be used. Consequently this media allows a higher density of bits to be recorded. It is well-recognized in the field that materials with moderate difference, such as 0.1

Tesla, in magnetic moment can result in substantial differences in performance in high-density magnetic recording devices. Therefore, the present invention is distinctive and superior over Kakuno's alloy film. Further, Mallary does not obviate the defects of Kakuno because it does not teach or remotely suggest modifying Kakuno's process to improve the morphology and crystallinity of the resulting alloy film.

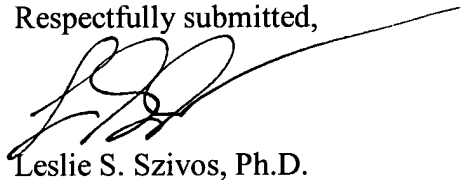
In view of the above, not only the cited references fail to remotely suggest modifying Kakuno's process, but Kakuno's alloy films are inherently not able to possess the characteristics of the claimed alloy films even if, *arguendo*, Kakuno's process is modified as suggested by the Examiner.

Therefore, the claims of the present application are not obvious over the combination of Kakuno and Mallary, since the prior art references do not teach or remotely suggest applicants' claimed *cobalt-iron binary alloy electroplated film which has a saturation magnetization of 2.30 Tesla or greater, anisotropic and consisting of a binary alloy (100%-x) Co(x)Fe, where x is between about 55% and about 75% by weight.*

In view of the above remarks and the experiments evidenced in the previously submitted § 132 Declaration filed on June 10, 2004, applicants submit that the claims of the present invention are patentably distinguished from the combined disclosures of Kakuno and Mallary. Applicants thus respectfully request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. § 103 that is based upon the disclosures of Kakuno and Mallary.

Thus, in view of the foregoing amendments and remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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